

Amendments to the Specification

Page 1. Amend paragraph 0001 as follows:

[0002] Reference may be made in this specification (using bracketed numbers) to the following publications listed in Appendix B, available either in printed form or online and incorporated herein by reference. ~~reference~~:

1. W3C Note, "Web Services Description Language (WSDL) 1.1", March 15, 2001.
2. Ueli Wabli et al., *WebSphere Version 5 Web Services Handbook*, IBM Redbook, SG24-6891-00, March 2003.
3. W3C Working Draft, "SOAP Version 1.2 Part 0: Primer", June 26, 2002.
4. W3C Working Draft, "SOAP Version 1.2 Part 1: Messaging Framework", June 26, 2002.
5. W3C Working Draft, "SOAP Version 1.2 Part 2: Adjuncts", June 26, 2002.
6. Aaron Skonnard, "Understanding SOAP", MSDN Library, March 2003.
7. W3C Recommendation, "Extensible Markup Language (XML) 1.0 (Second Edition)", October 6, 2000.
8. Peter Flynn (ed.), "The XML FAQ v. 3.01", January 14, 2003.
9. Sun Microsystems, Inc., "Java API for XML-Based RPC (JAX-RPC)", printed August 28, 2003.
10. Ian Foster et al., "The Physiology of the Grid: An Open Grid Services Architecture for Distributed Systems Integration", June 22, 2002.

¹¹. Steve Tuecke et al., "Grid Service Specification", Draft 3, July 17, 2002.

¹². W3C Note, "SOAP Messages with Attachments", December 11, 2000.

Pages 2-3. Amend paragraph 0004 as follows:

[0004] In a service-oriented architecture such as Web services, a service provider can provide a number of transport protocols used for binding to access a service. This is done in order to provide better quality-of-service (QOS) features for the clients. One example of this binding is a transport binding for a service using IIOP instead of SOAP/HTTP for better performance. (For these and other acronyms, see the glossary in ~~the appendix~~ Appendix A below. SOAP is described in more detail in references 3-6 and 12 of Appendix B.) The service provider defines this binding information in a WSDL document at the time of the service deployment and initiates the server-side framework (stubs/JMS listener etc.) to support those bindings. The service skeletons are created to handle incoming requests in a binding-specific manner and convert the incoming requests to the platform-specific service invocation model. There can be a number of binding protocol models (SOAP/HTTP, IPC, IIOP, RMI, SOAP/JMS etc.) that can be created based on such criteria as performance, interoperability, service container capabilities and QOS requirements. The client who uses the service can get hold of the WSDL document for the service from some registries (UDDI) or from the service itself (through HTTP GET) and evaluate the WSDL document. The client can generate static stubs or can dynamically introspect the WSDL document for the service invocation. This results in a client with a number of transport-protocol binding information proxies, from which the client needs to select one to invoke the service.

Page 6. Amend paragraph 0016 as follows:

[0016] While the invention is preferably implemented in software, the The invention may be implemented in hardware, software, or ~~some~~ as a combination of hardware and software~~the two~~. When implemented ~~in~~ as a combination of hardware and software, if the software part of the

combination may take the form of a program storage device (such as a magnetic or optical disk or semiconductor memory) readable by a machine, tangibly embodying a program of instructions executable by the machine to perform defined method steps.

Page 5. Amend paragraph 0015 as follows:

The present invention does not address service-specific binding requirements to achieve certain QOS features. This includes binding addressing scheme, message format, encoding, message style (DOC/RPC), invocation model and other binding-specific QOS (co-relation, transaction and security etc). In addition, the present invention imposes no programmatic definition on binding usage. The client-side framework selects these bindings, and clients are independent of this binding selection. An implementation can be a WSIF framework (provides a number of bindings for Web services) that can be used along with a JAX-RPC handler (binding selector) for Web service binding selection. (JAX-RPC is described in more detail in reference 9 of Appendix B.)

Pages 11-12. Amend paragraph 0043 as follows:

[0043] The negotiation protocol is a preferably XML-based protocol for supporting a binding negotiation between a client and the service. (XML is described in more detail in references 7-8 of Appendix B.) While the negotiation protocol need not use any particular language, it may have these components: (a) a negotiation action and conversation header; (b) negotiation data; and (c) profiles to help the conversation. Preferably, the protocol also has extensibility features to support message extensions. The negotiation action may specify actions like list bindings, select binding, use binding, binding property enumeration, etc. The conversation header may contain correlation information on messages. The negotiation data includes the data for the actions described above. These are the profiles to help binding selection. This can include client/service container information, user-defined requirements and any other information that can help binding selection. The profiles may be in any data format, including binary data. In the case of SOAP, SOAP attachments [12] (which are MIME-type attachments) may be used to send these MIME-based profiles.

Page 17. Amend the title as follows:

APPENDIX A: ABBREVIATIONS AND ACRONYMS

After page 17. Add the following new appendix:

APPENDIX B: CITED REFERENCES

1. W3C Note, “Web Services Description Language (WSDL) 1.1”, March 15, 2001.
2. Ueli Wahli et al., WebSphere Version 5 Web Services Handbook, IBM Redbook, SG24-6891-00, March 2003.
3. W3C Working Draft, “SOAP Version 1.2 Part 0: Primer”, June 26, 2002.
4. W3C Working Draft, “SOAP Version 1.2 Part 1: Messaging Framework”, June 26, 2002.
5. W3C Working Draft, “SOAP Version 1.2 Part 2: Adjuncts”, June 26, 2002.
6. Aaron Skonnard, “Understanding SOAP”, MSDN Library, March 2003.
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12. W3C Note, "SOAP Messages with Attachments", December 11, 2000.